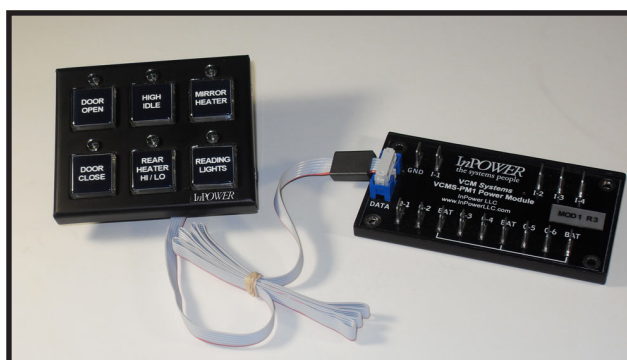


InPOWER

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Owners Manual Model VCMS-SC Switch Panel System



1. Product Description

The Model VCMS-SC Switch Panel System consists of a six-position switch module, a six output power module and a communications logic cable. It is used in applications that require the driver to operate auxiliary vehicle 12 volt devices such as interior and exterior lights, heaters, warning lights, beacons, pumps, etc. The switch module's thin profile ($\frac{1}{2}$ Inch thick) allows it to be mounted in many locations. Its back lighted push buttons allows easy night viewing. Each push button position contains a status LED that indicates if the switch is on or off.

The system's power module is remotely located from the switch module and connected with a communications logic cable. This cable is available in standard lengths. The power module contains six 12 volt 15 amp outputs for powering the auxiliary loads. The switch module positions activate their respective power module outputs (SW1=Output 1, SW2=Output 2, etc.). Each switch position can be set up to operate as a two-position latching (push to turn on, push again to turn off) function or as a momentary (turned on only when button is pressed) switch. An input (I-1) is provided on the power module that is connected to the Ignition Switch On power. This ensures that the ignition switch must be on in order to activate any power module output. The switch module's back lights are also activated when the ignition switch is in the on position.

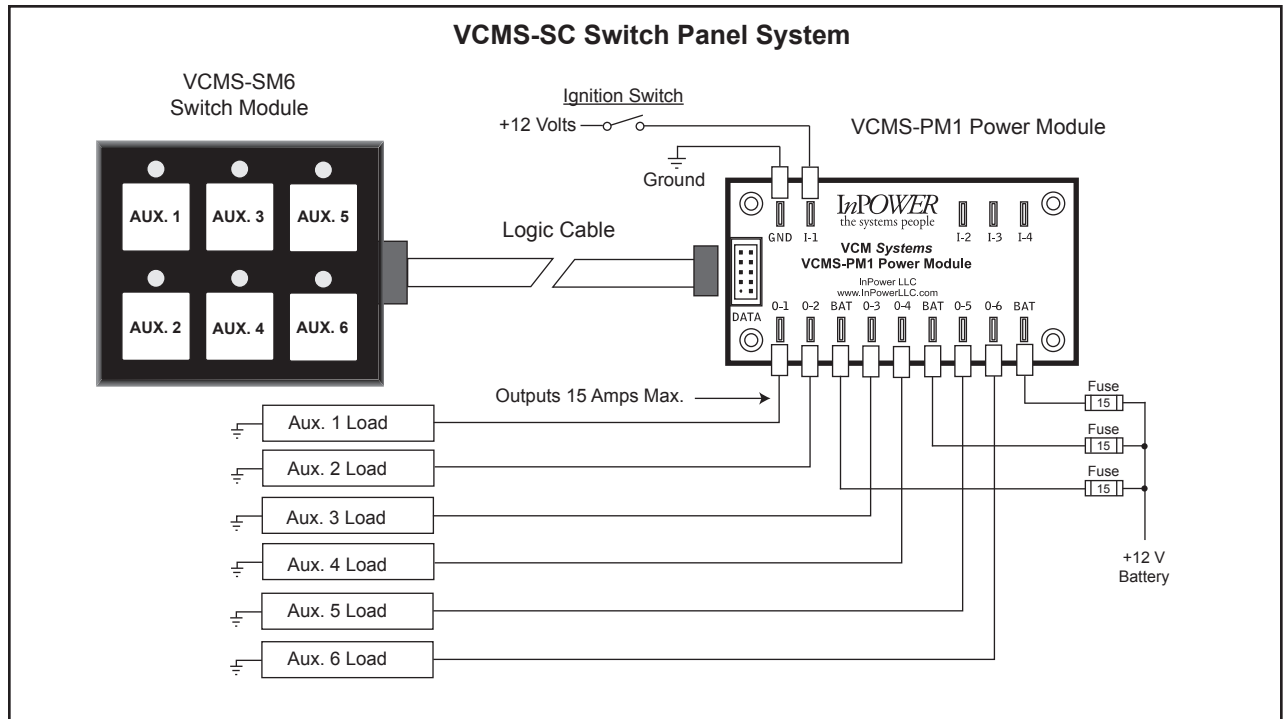


Figure 1

2. Switch Module

The system contains a Model VCMS-SM6 Switch Module containing six push buttons. The anodized aluminum case features a low profile measuring only 0.55 inches high. It is mounted to a flat panel via four 0.70 inch long 6-32 threaded studs. The case design is a two piece clam shell held together by two screws on each side. The module can be disassembled quickly for installing or changing switch legends by removing the four screws and separating the case. Each switch position contains a custom legend and status indicator and will be pre configured to be momentary or two-position latching. The module contains a 10-position connector on the rear for the communications logic cable connection. This connector accepts the communication logic cable that connects to the remote power module. The logic cable length is specified at time of order. Standard lengths are five, ten and twenty feet. A mounting cutout template is shown in Figure 3.

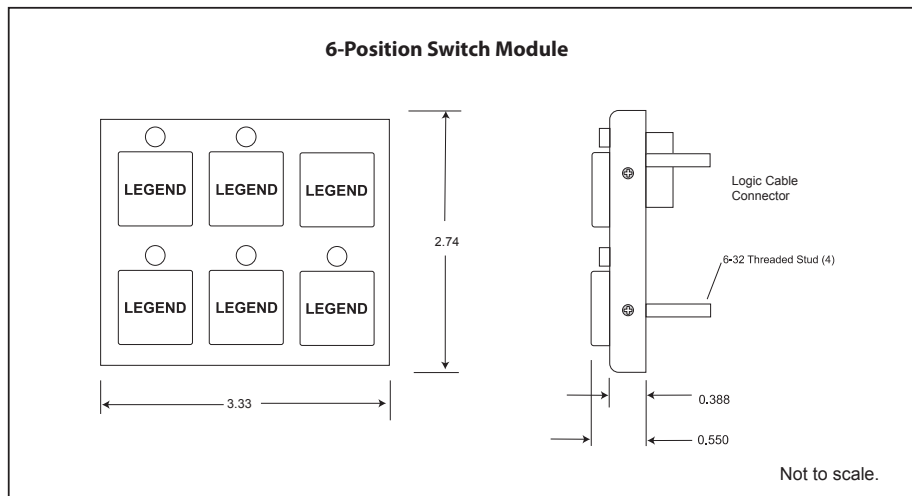


Figure 2

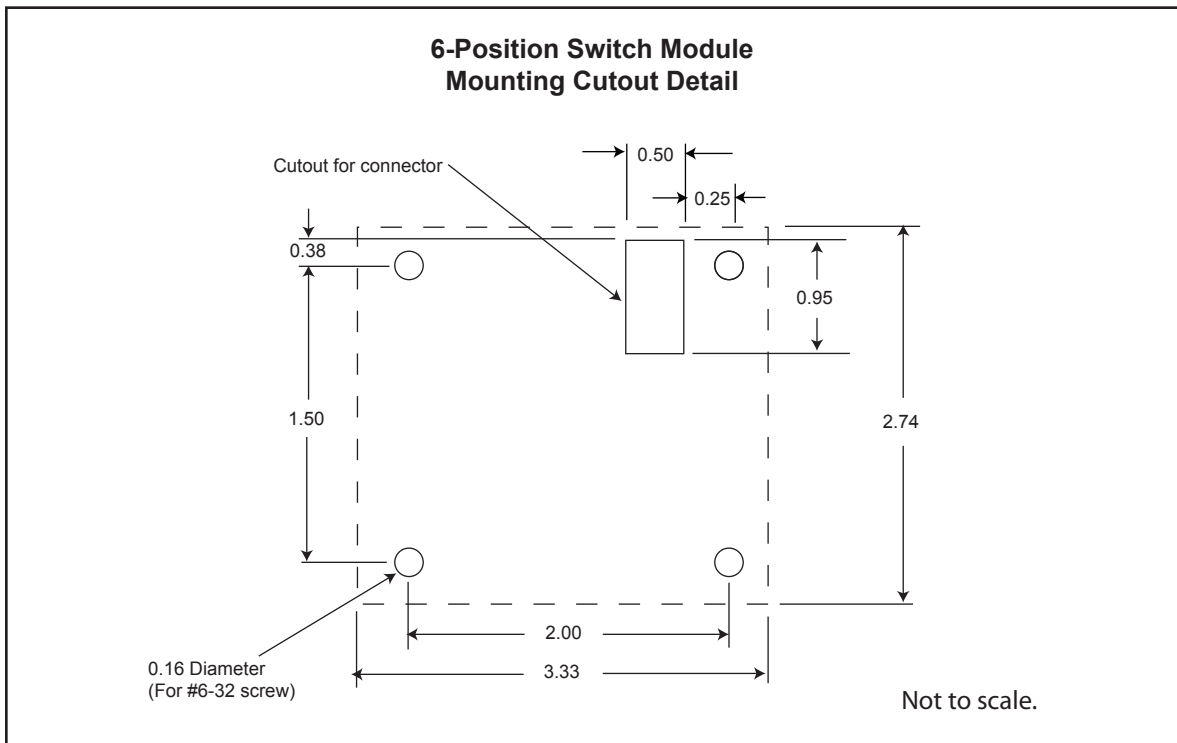


Figure 3

3. Power Module - Model VCMS-PM1

The Model VCMS-PM1 Power Module contains six 12 volt power outputs, four digital inputs and a communications interface. The six power outputs are set from commands received on the communications interface from the switch module. The status of the four digital inputs are continuously sent via the communications interface to the switch module where the application program resides. Wiring terminations for the power outputs, digital inputs and the +12 volt supply utilize 0.25 inch faston blade terminals. The communications interface utilizes a 10-pin connector. A power module diagram is shown in Figure 4.

The power module's six solid state outputs are high side drivers, each rated at +12 volts @ 15 amps. The outputs provide automatic shutdown protection for short circuit and overload conditions. Three +12 volt terminals (BAT) are provided for the incoming battery power. Note that all six power switches are powered from a common 12 volt bus that is connected to the three +12 volt power terminals. To achieve the maximum power module current rating all three 12 volt power inputs must be connected to battery power through individually fused 15 amp feeds. A mechanical drawing of the VCMS-PM1 Power Module can be seen in Figure 5.

The power module's four digital Inputs allow external signals to be monitored by the system. These signals are voltage levels between zero volts (chassis ground) and battery voltage. Typically these inputs are from a contact closure such as a switch to either ground or +12 volts. The VCMS application program defines each input as actuated by either a ground or +12 volt input. The program for the VCMS-SC Switch Panel System uses input I-1 to monitor the Ignition Switch status so it is activated by a +12 volt signal.

3. Power Module (Continued)

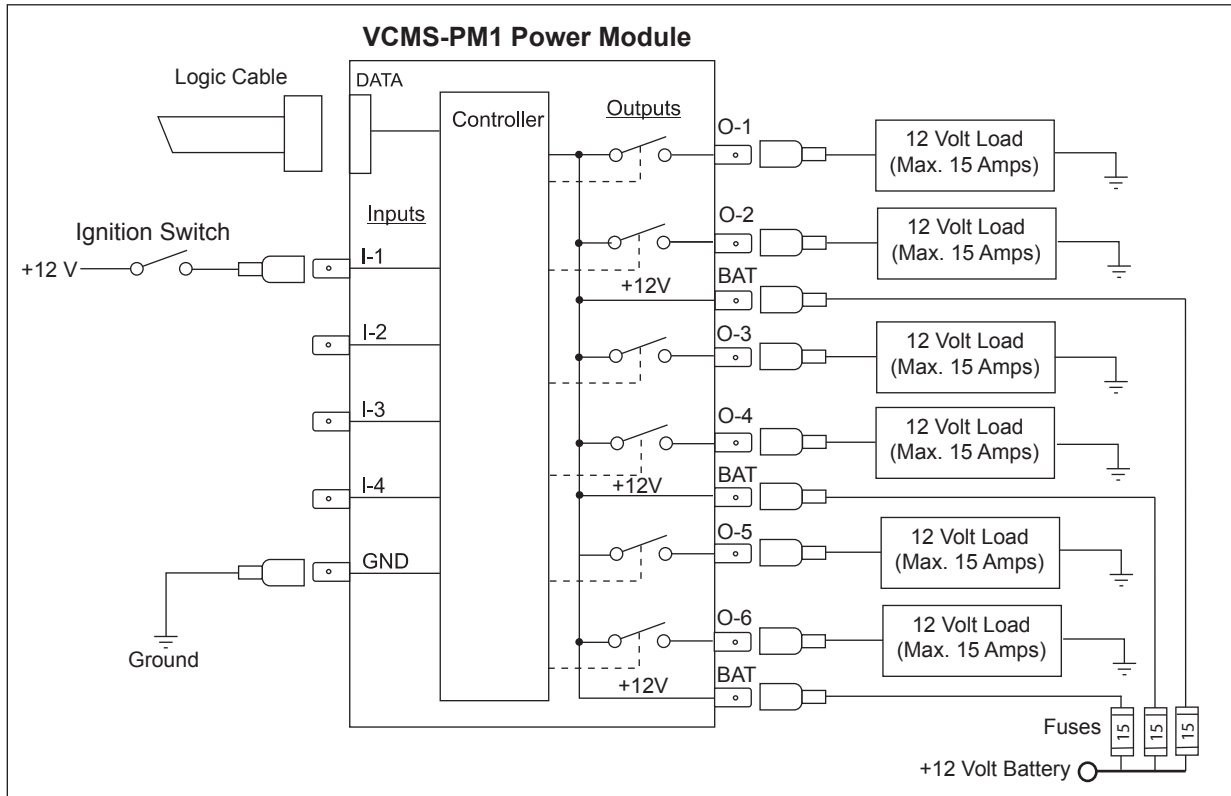


Figure 4

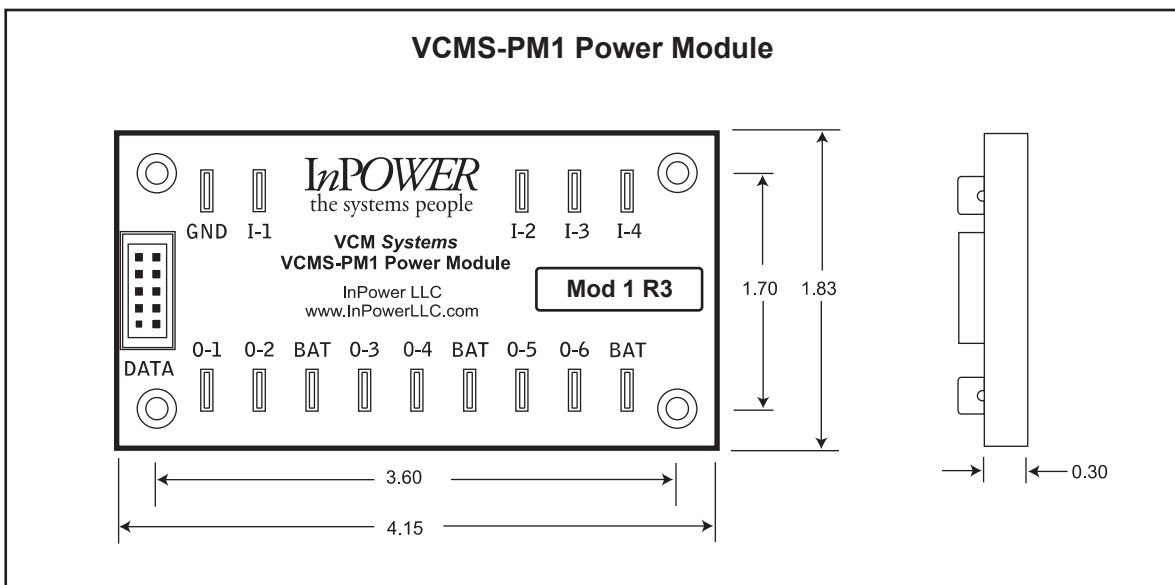


Figure 5

4. Communications Logic Cable

A communications function is required to pass information between the switch module and power module. A cable system is used to connect the communications interface circuit on the switch module with the one on the power module. A ribbon type cable is used with a connector at each end. The Model VCMS-SC Switch Panel System uses a Model CA-VCMS-2 cable with the length of cable between the two connectors specified on the order.

5. Wiring Terminations

All power module wire connections utilize male 0.25 inch faston blade terminals. Wire connections to the power module should use insulated faston terminals, either straight or right angle type.

6. Installation

6.1 Getting Started

Determine the best location for the switch module and the power module. Allow for the routing of the communications logic cable between the modules. We recommend installing the cable in a cable loom for protection. You will need a crimping tool for the 0.25 inch faston blade terminals. Be sure to follow the crimping tool instructions for the proper wire size and terminals.

6.2 Mount the Switch Module

Mount the switch module on a flat surface or mounting bracket using the four #6-32 threaded studs to secure the module to the panel. You will need to make a cutout for the logic cable connector (See Figure 3). Connect the logic cable to the switch module and route the cable to the power module.

6.3 Mount the Power Module

Mount the power module to a flat metal surface using four #6-32 screws. **Do not over tighten the mounting screws and do not drill out these mounting holes to use larger screws.** Next, connect the ground wire to the power module. **Be sure to connect to a good quality vehicle ground source. It is important that the ground is connected to the power module before connecting the logic cable.** Connect the power output wires and the input wires to the power module using insulated 0.25 inch faston terminals. After wiring the ground, power output and input wires connect the logic cable to the 10-position connector on the top of the module.

Be sure to determine the current draw of the six power outputs to ensure that the power module is not overloaded. If inductive loads (motors, coils, etc.) are used it is important that these devices contain a diode suppressor across the device.

Connect the three +12 volt power source wires to the three BAT terminals on the power module. **These three wires must be fused at the power source.** If the +12 volt power source is the vehicle battery, note that a VCMS configuration with a single power module with all switches and back lights off will draw about 16 milliamps of power. Alternatively, you may obtain the +12 volts power from an ignition switch activated power source.

7. Operation

Turn the Ignition Switch to the On position. The Switch Module's back lights will illuminate.

Operating any push button on the switch module will cause its status LED to turn on and the corresponding power module output to be activated. Activating switch position SW1 will cause power module output O-1 to activate, SW2 will cause O-2 to activate, and so on.

Note that if a switch position is activated and the Ignition Switch is turned off the power module output will turn off but the activated switch's status LED will remain on, indicating that the switch is still activated.

Each switch will function as a momentary or latching, depending on the system configuration specified at time of order. The following options are available:

- Option 1 - Switch 1 through 6 = Latching (2-Position)
- Option 2 - Switch 1 through 5 = Latching, Switch 6 = Momentary
- Option 3 - Switch 1 through 3 and Switch 5 = Latching, Switch 4 & 6 = Momentary
- Option 4 - Switch 1, 3 & 5 = Latching, Switch 2, 4 & 6 = Momentary

Switch Module Positions

